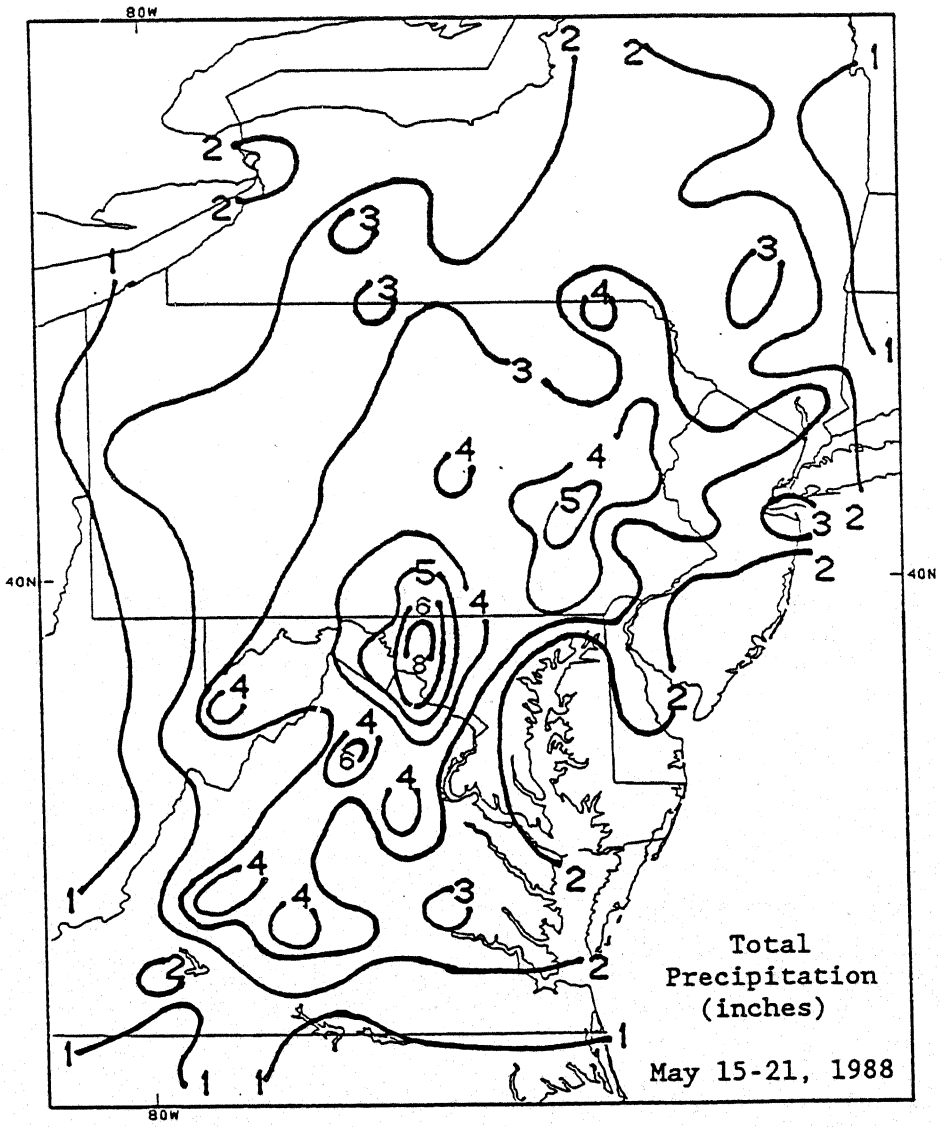
CLIMATE ANALYSIS CENTER

WEEKLY CLIMATE BULLETIN

No. 88/21 Washington, DC May 21, 1988



TORRENTIAL RAINFALL INUNDATED PARTS OF THE MID-ATLANTIC REGION LAST WEEK AS A SLOWLY MEANDERING LOW PRESSURE DISTURBANCE PRODUCED HEAVY SHOWERS AND THUNDERSTORMS. OTHER AREAS IN THE U.S., NAMELY THE CENTRAL GREAT PLAINS AND SOUTH-CENTRAL TEXAS, ALSO MEASURED HEAVY RAINFALL (SEE U.S. WEEKLY WEATHER HIGHLIGHTS). HOWEVER, MUCH OF THE MIDWEST AND SOUTHEAST FAILED TO RECEIVE ANY SIGNIFICANT RAINFALL AND CONTINUED TO BE ABNORMALLY DRY (SEE SPECIAL CLIMATE SUMMARY).

NOAA - NATIONAL WEATHER SERVICE - NATIONAL METEOROLOGICAL CENTER

WEEKLY CLIMATE BULLETIN

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This Bulletin is issued weekly by the Climate Analysis Center and is designed to indicate, in a brief, concise format, current surface climatic conditions in the United States and around the world. The Bulletin contains:

Highlights of major global climatic events and anomalies.
U.S. climatic conditions for the previous week.
U.S. apparent temperatures (summer) or wind chill (winter).
Global two-week temperature anomalies.
Global four-week precipitation anomalies.
Global monthly temperature and precipitation anomalies.
Global three-month precipitation anomalies (once a month).
Global twelve-month precipitation anomalies (every 3 months).
Global temperature anomalies for winter and summer seasons.
Special climate summaries, explanations, etc. (as appropriate).

Most analyses contained in this Bulletin are based on preliminary, unchecked data received at the Center via the Global Telecommunication System. Similar analyses based on final, checked data are likely to differ to some extent from those presented here.

To receive copies of the Bulletin or change mailing address, write to:

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Washington, DC 20233
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GLOBAL HIGHLIGHTS

MAJOR CLIMATIC EVENTS AND ANOMALIES AS OF MAY 21, 1988
(Approximate duration of anomalies is in brackets.)

1. North Central U.S.A. and South Central Canada:
DRYNESS CONTINUES.
Little or no precipitation fell in the region. Driest sections include most of Montana and western North Dakota [10 weeks].

2. Central and Southern United States:
UNUSUALLY DRY CONDITIONS PREVAIL.
Rainfall amounted to 12.2 mm (0.48 inch) or less. Dryness persisted across much of the southern and central United States (see Special Climate Summary) [7 weeks].

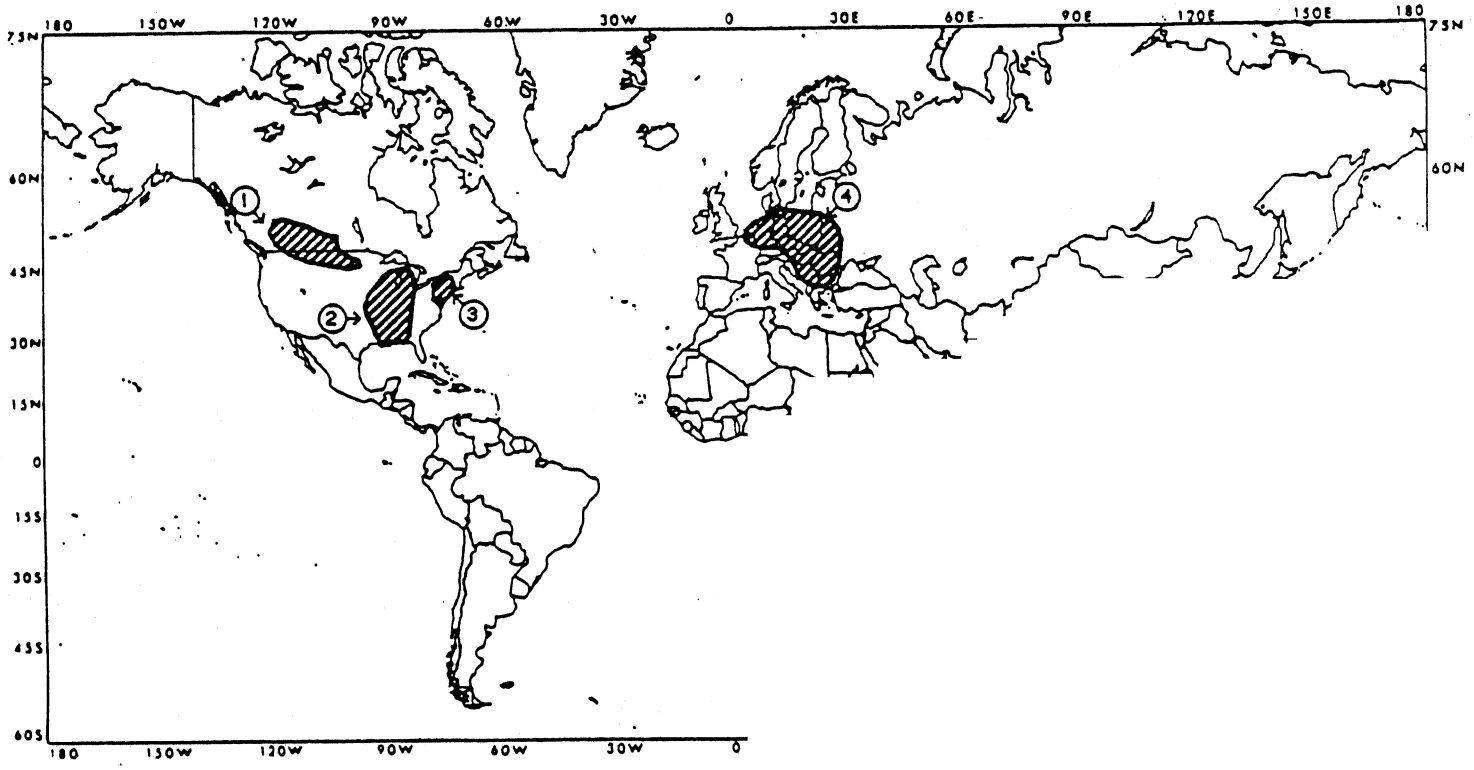
3. Northeastern United States:
HEAVY RAINS HIT AREA.
Very heavy rains, up to 215.9 mm (8.50 inches), fell across much of the region during the past week in association with an upper level low pressure center that stalled over the area (see U.S. Weekly Weather Highlights) [Episodal Event].

4. Europe:
DRYNESS PERSISTS.
Most stations reported less than 11.9 mm (0.47 inch) of rain. Much of Europe from West Germany to Turkey remained very dry [7 weeks].

5. East Central China:
HEAVY RAINS END DRYNESS.
Very heavy precipitation fell across much of eastern China where as much as 124.0 mm (4.88 inches) of rain was recorded at some stations [Ended at 8 weeks].

6. Thailand:
TORRENTIAL RAINS CONTINUE.
Unusually heavy rains persisted across Thailand. Some stations measured amounts approaching 245.0 mm (9.65 inches) during the past week [5 weeks].

7. Southeastern Australia:
AREA BECOMES UNUSUALLY WET.
More heavy rains, up to 122.2 mm (4.81 inches), occurred in much of New South Wales and Victoria. [6 weeks].



Approximate locations of the major anomalie
this map. See the other world maps in this
anomalies, four-week precipitation anomalies

U.S. WEEKLY WEATHER HIGHLIGHTS

FOR THE WEEK OF MAY 15 THROUGH MAY 21, 1988

Two slow-moving storm systems, one located over the mid-Atlantic states, the other affecting the central Great Plains, dropped heavy rainfall last week and likely caused some localized flooding (see Table 1). In Virginia, Maryland, Pennsylvania, and surrounding states, a nearly-stationary upper level low pressure center produced intense showers and thunderstorms. Early in the week, many locations experienced torrential downpours and hail as severe thunderstorms covered the region. Later in the week, as the low pressure center weakened, the storms became more isolated in nature, but those areas receiving rainfall measured copious amounts (see front cover). According to the River Forecast Center (RFC), maximum state totals were 3.5 inches in eastern New Jersey, 3.8 inches in south-central New York, 5.5 inches in northeastern West Virginia, 6.2 inches in southern Pennsylvania, 6.4 inches in northern Virginia, and 8.5 inches in north-central Maryland. Farther west, nearly four inches of rain fell across parts of Wyoming, South Dakota, Colorado, Kansas, and much of Nebraska when a low pressure system stalled over the central Great Plains (see Figure 1). Largest amounts observed per state were 2.5 inches in southeastern Wyoming, 3.8 inches in northwestern Kansas, and 4.0 inches in northeastern Colorado, southwestern Nebraska, and eastern South Dakota, according to the RFC. In Texas and Louisiana, hit and miss thundershowers brought some relief from the anomalously dry conditions of this year to the central and southern sections of the states (see Figure 2). While some RFC stations observed up to 4.3 inches in southern Louisiana and a maximum of 4.9 inches northwest of San Antonio, TX, other stations in the region measured far lesser amounts. Light to moderate totals occurred in northern California and along the Pacific Northwest coast, throughout much of the Rockies and Great Plains, in portions of the Midwest and Southeast, and east of the Appalachians. Little or no rain fell in the Southwest and Pacific Northwest interior, in the northern halves of Montana and North Dakota, extreme southern and eastern Texas, and from northern Wisconsin southeastwards into southern Florida. The latter area, especially the Midwest, has become unusually dry since the first week of April (see Special Climate Summary).

Seasonable temperatures covered much of the nation last week. Areas slightly above normal included most of the West, the northern two-thirds of the Great Plains, the Midwest, and scattered sections of the Southeast, mid-Atlantic, and New England states. Greatest departures (+6 to +9°F) were located in southern California and Arizona, the central Great Plains, and northern New England (see Table 2). Several stations in these regions broke daily record high temperatures during the week. Temperatures averaged slightly below normal in central Washington, parts of the southern Rockies and southern third of the Great Plains, in Georgia and Florida, the central Appalachians, and along the New England coast. Alaska's weekly temperatures were generally near normal.

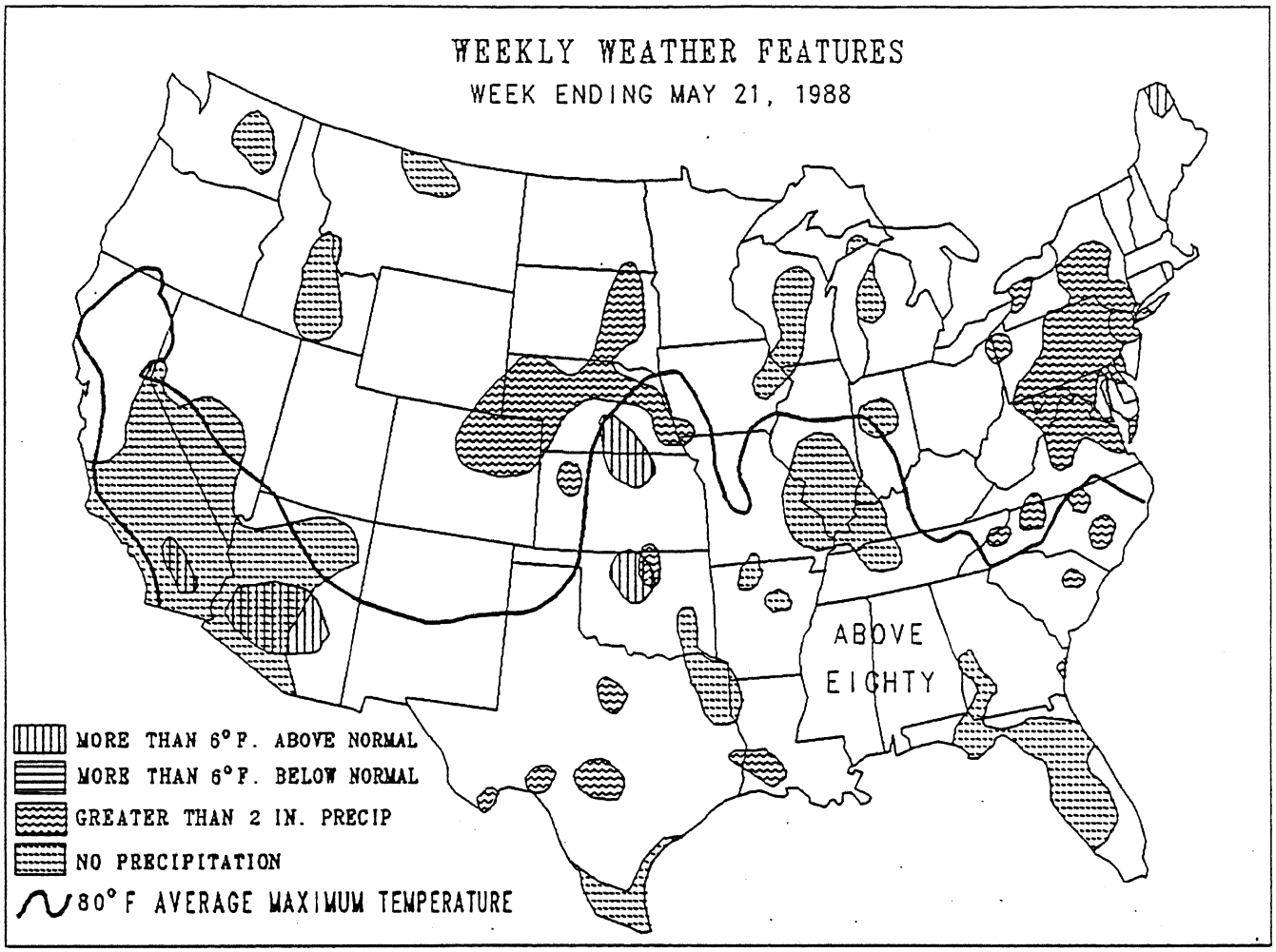


TABLE 1. Selected stations with more than two inches of precipitation for the week.

Martinsburg, WV	5.48	Syracuse, NY	2.59
Washington/Dulles, VA (IAD)	5.38	Washington/National, DC (DCA)	2.56
Allentown, PA	4.71	Key West, FL (EYW)	2.55
Akron, CO	4.02	Lake Charles, LA	2.53
Huron, SD	4.00	Cheyenne, WY	2.50
Denver, CO	3.72	Willow Grove NAS, PA	2.39
Scottsbluff, NE	3.36	Wilmington, DE	2.37
Norfolk, NE	3.34	Harrisburg, PA	2.34
Richmond, VA	3.17	Austin/Bergstrom AFB, TX	2.31
Sidney, NE	2.96	Youngstown, OH	2.24
New York/Kennedy, NY (JFK)	2.96	New York/La Guardia, NY (LGA)	2.21
Williamsport, PA	2.95	Morgantown, WV	2.19
Altoona, PA	2.82	Dover AFB, DE	2.18
Sumter/Shaw AFB, SC	2.82	Ketchikan, AK	2.17
Wilkes/Barre, PA	2.81	Raleigh/Durham, NC	2.17
Key West NAS, FL (NQX)	2.79	Poughkeepsie, NY	2.16
Binghamton, NY	2.79	Hickory, NC	2.14
Omaha/Offutt AFB, NE	2.71	Aberdeen, SD	2.10
Newport News, VA	2.69	Brunswick, GA	2.05
Annette Island, AK	2.68	Buffalo, NY	2.03
Newark, NJ	2.62		

TABLE 2. Selected stations with temperatures averaging greater than 5°F ABOVE normal for the week.

Station	TDepNml	AvgT(°F)	Station	TDepNml	AvgT(°F)
San Bernardino, CA	+9	74	Champaign/Urbana, IL	+6	69
Phoenix, AZ	+8	86	Houghton Lake, MI	+6	61
Mt. Washington, NH	+8	43	Lincoln, NE	+6	69
Glendale/Luke AFB, CA	+7	83	Oklahoma City, OK	+6	75
Oakland, CA	+7	66	Tulsa, OK	+6	75
Concordia, KS	+7	71	Burlington, IA	+6	68
Caribou, ME	+7	58	Sioux City, IA	+6	69
Ponca City, OK	+7	76	Spencer, IA	+6	66
Nome, AK	+6	43	Russell, KS	+6	70
Prescott, AZ	+6	64	Salina, KS	+6	71
Tucson, AZ	+6	81	Houlton, ME	+6	58
Eureka, CA	+6	58	Grand Island, NE	+6	69

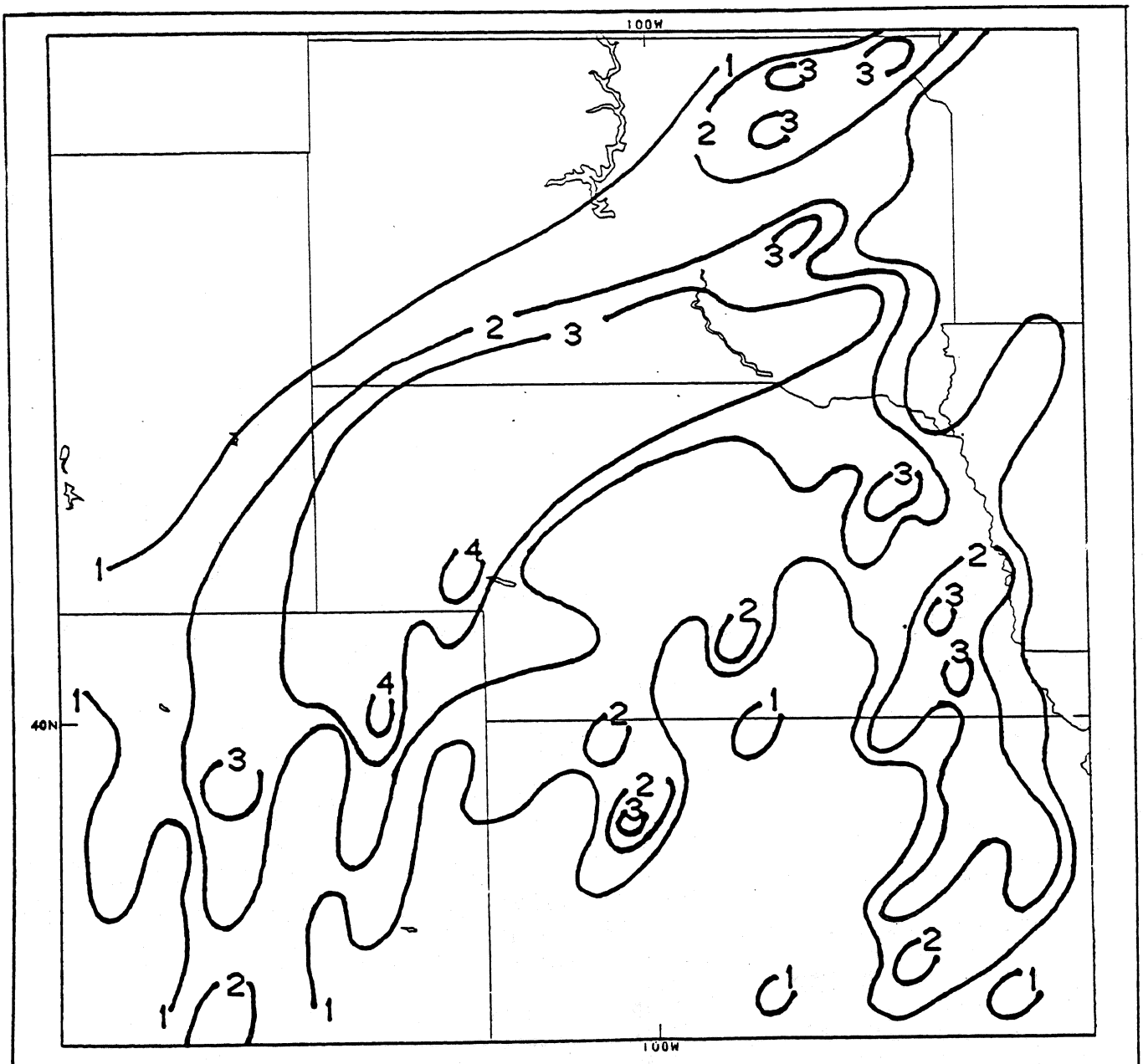


Figure 1. Weekly total precipitation (inches) in the central Great Plains during May 15-21, 1988, according to the River Forecast Center. Unfortunately, much of North Dakota, Minnesota, and southern Canada received scanty amounts.

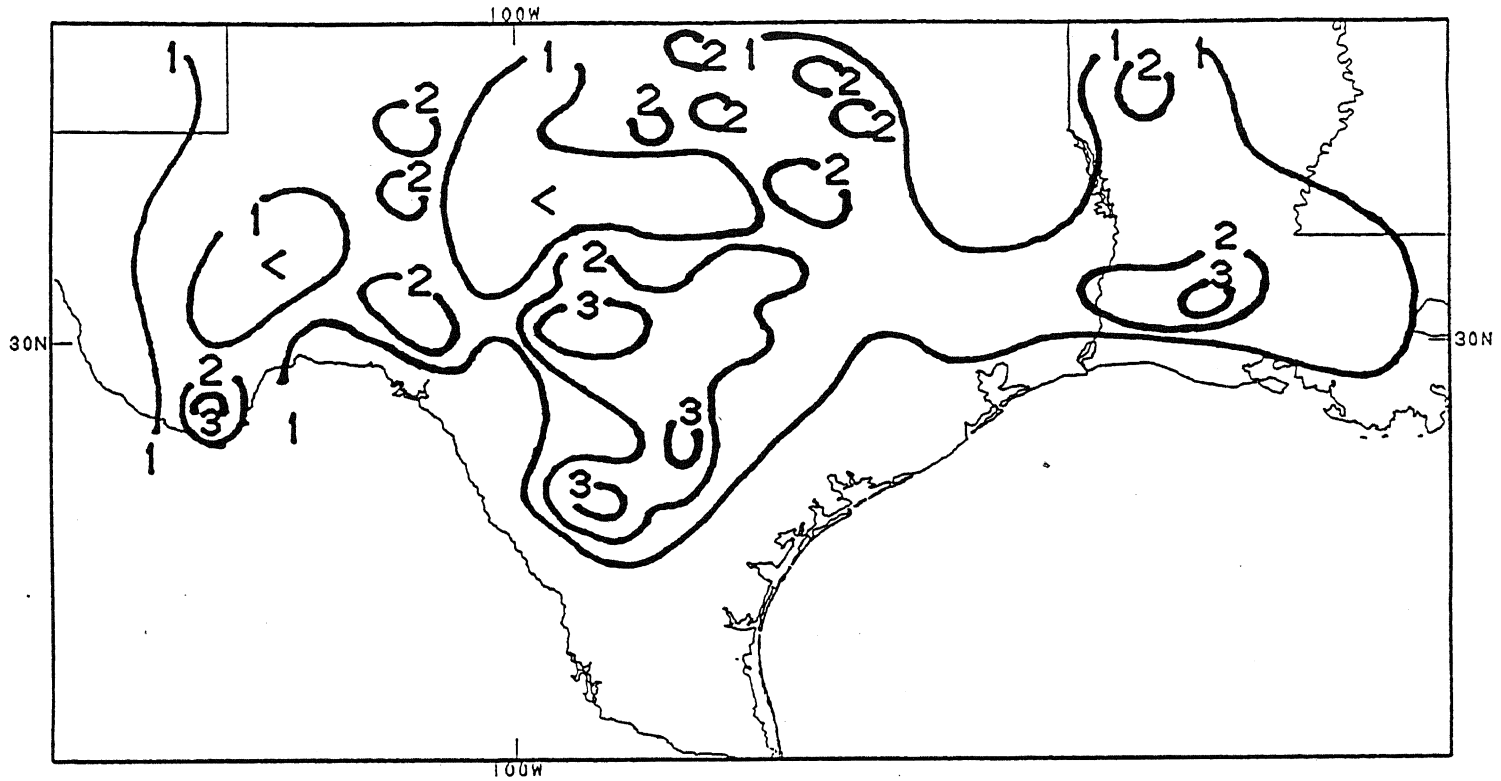
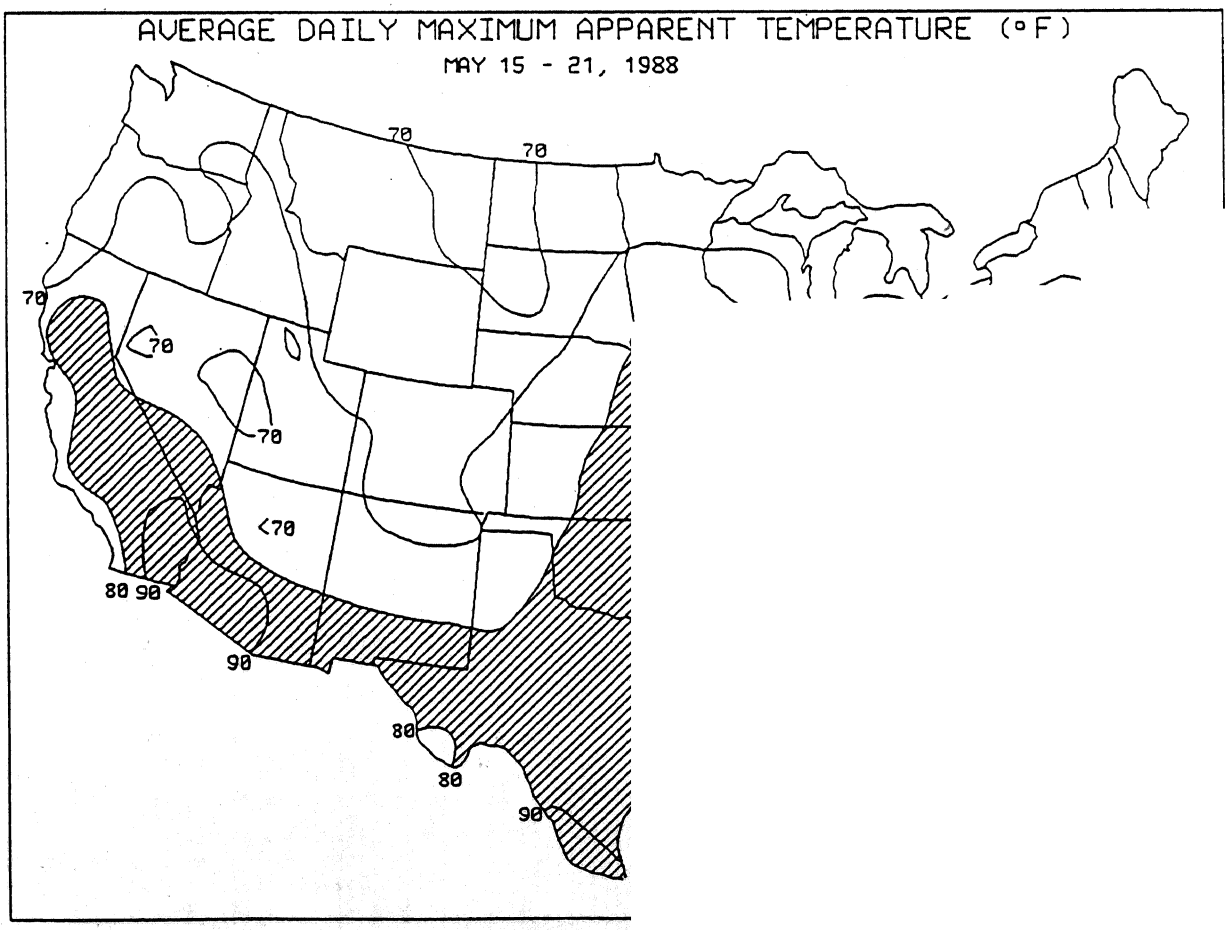
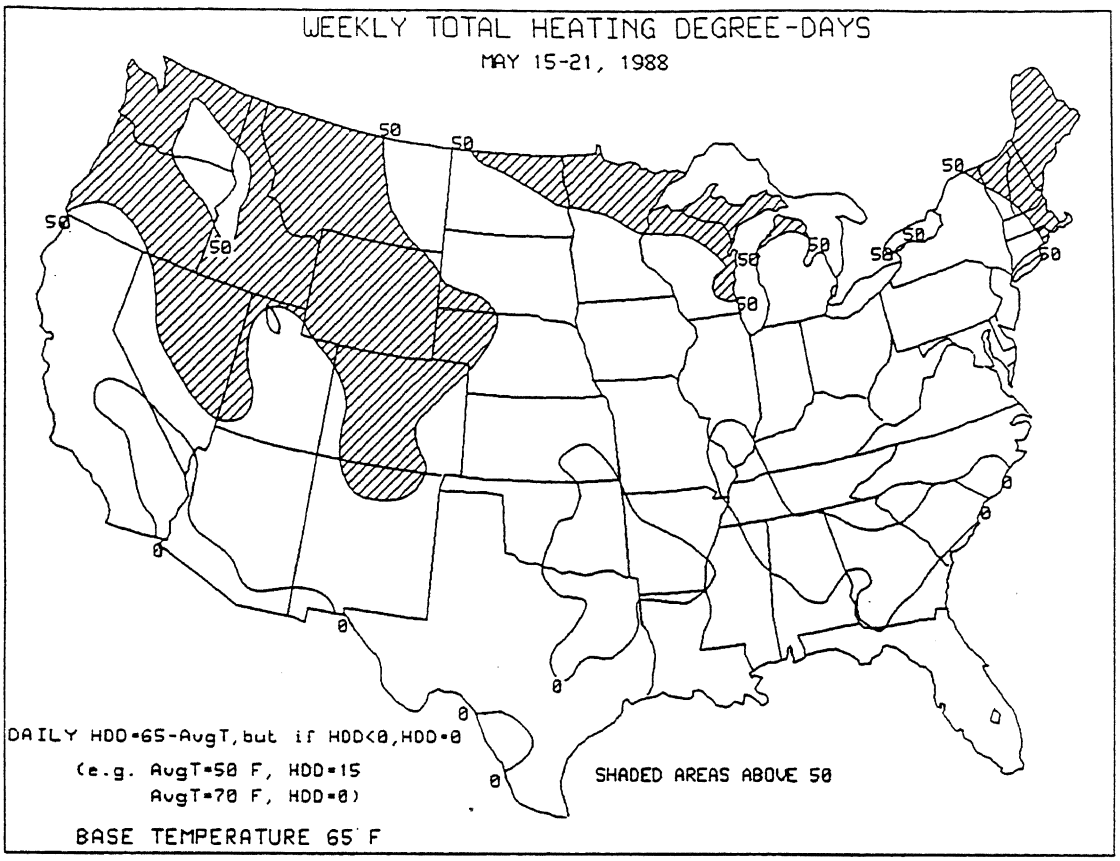
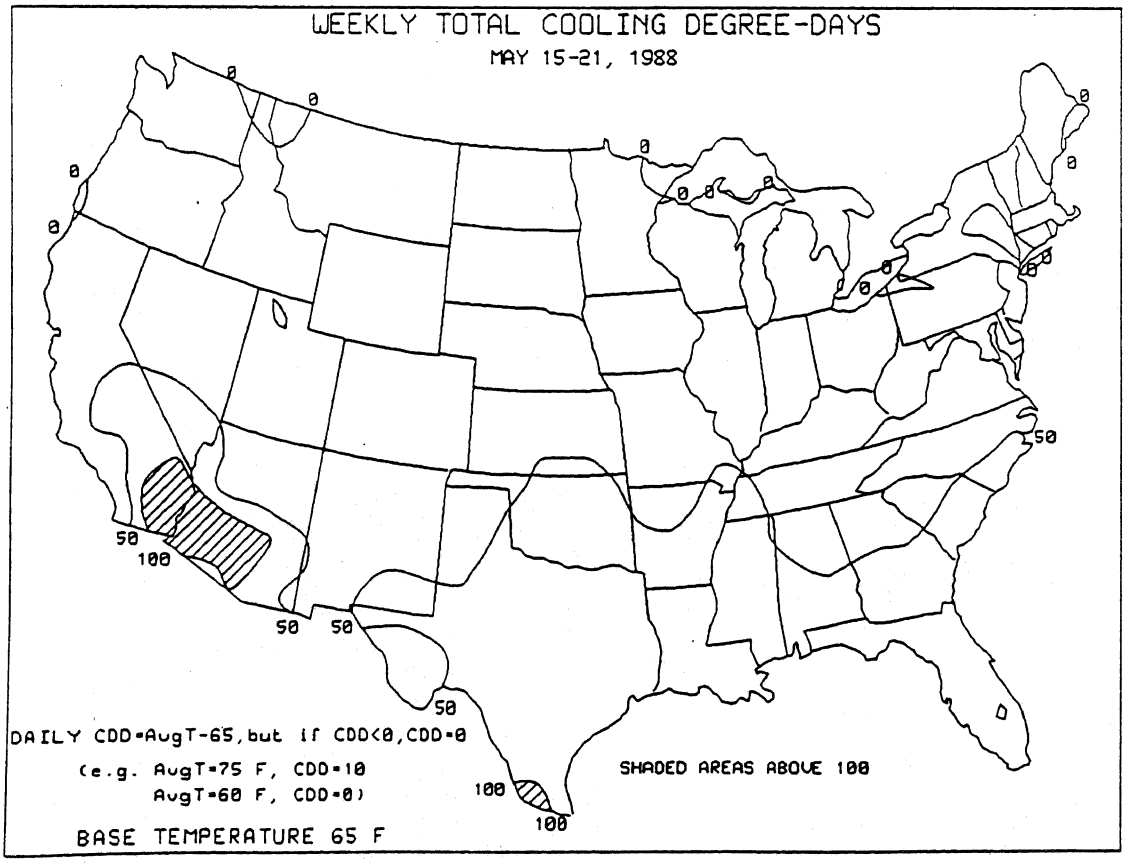


Figure 2. Weekly total precipitation (inches) in southern Texas and Louisiana during May 15-21, 1988, according to the River Forecast Center. Totals were highly variable as the thundershowers were of the hit and miss variety.



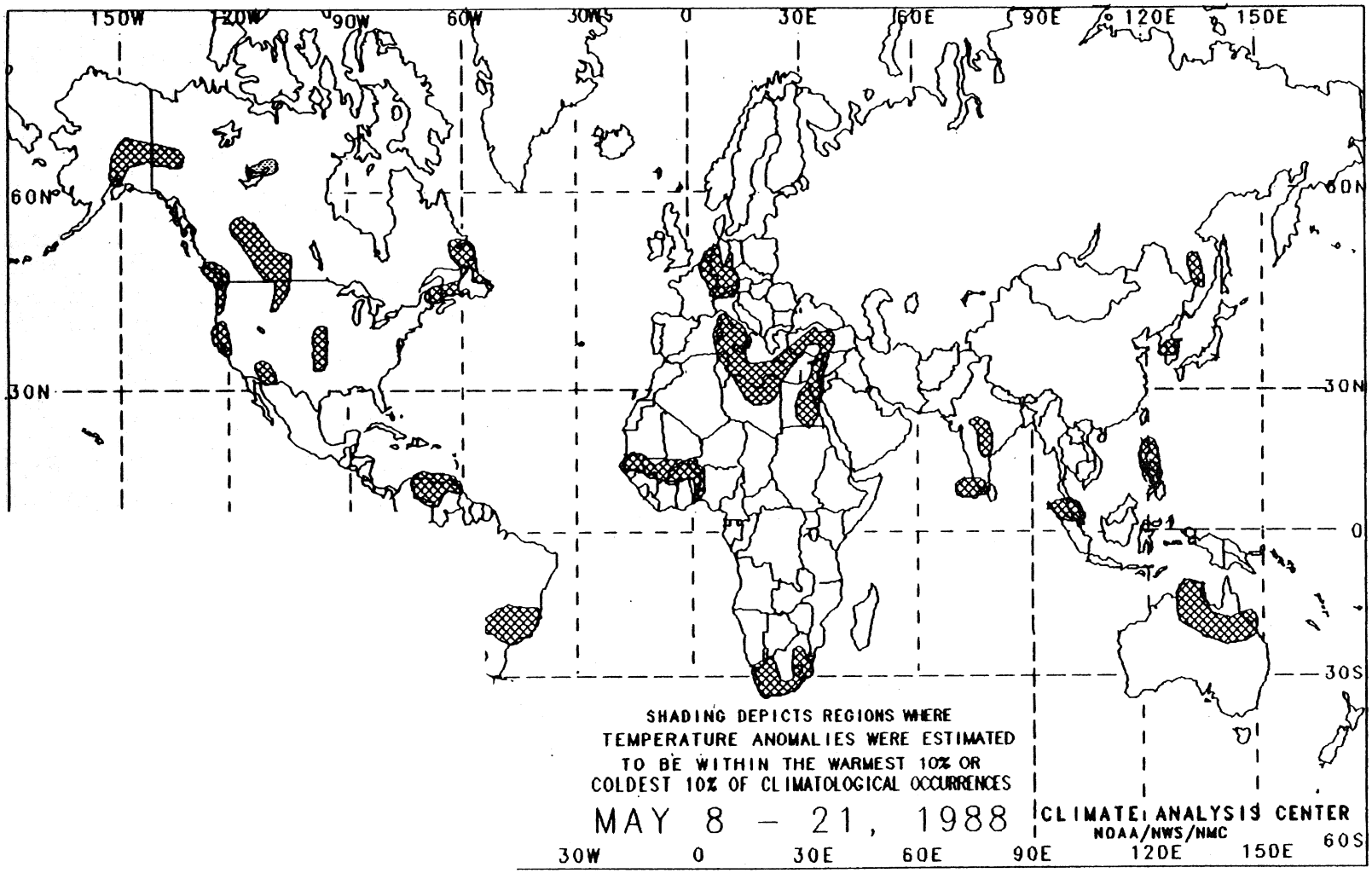


Both the Total Heating Degree Days (HDD) AND Total Cooling Degree Days (CDD) charts are depicted. The departure from normal charts for both HDD and CDD were near normal (0). As the temperatures rapidly increase, the CDD departure from normal chart will be shown when the total HDD chart's values decrease to near zero (in a few more weeks).



GLOBAL TEMPERATURE ANOMALIES

2 Week



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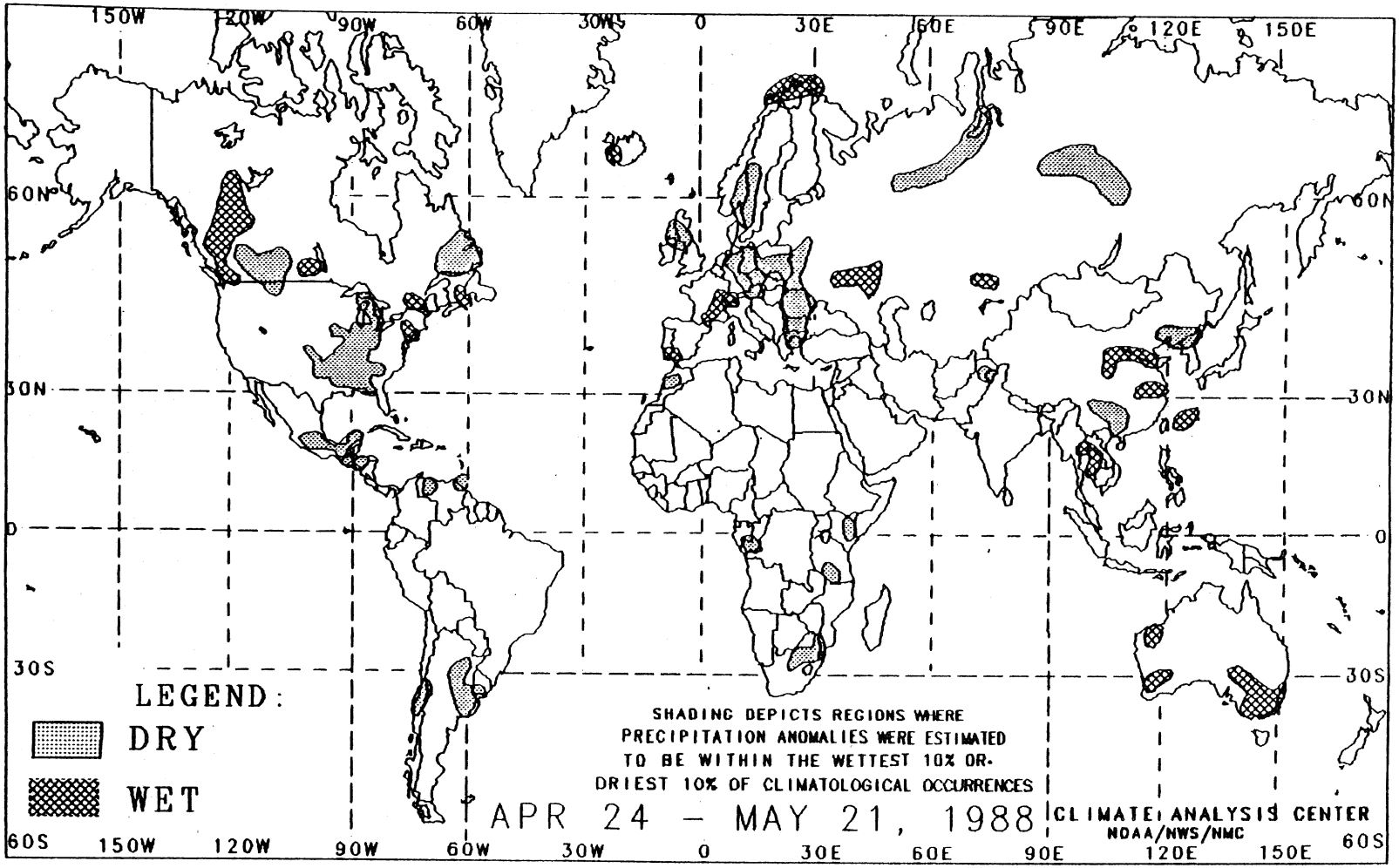
In some regions, insufficient data exist to determine the magnitude of anomalies. These regions are located in parts of tropical Africa, southwestern Asia, interior equatorial South America, and along the Arctic Coast. Either current data are too sparse or incomplete for analysis, or historical data are insufficient for determining precentiles, or both. No attempt has been made to estimate the magnitude of anomalies in such regions.

The chart shows general areas of two week temperature anomalies. Caution must be used in relating it to local conditions, especially in

GLOBAL PRECIPITATION ANOMALIES

4 Week



The anomalies on this chart are based on approximately 2500 observing stations for which at least 27 days of precipitation observations (including zero amounts) were received or estimated from synoptic reports. As a result of both missing observations and the use of estimates from synoptic reports (which are conservative), a dry bias in the total precipitation amount may exist for some stations used in this analysis. This in turn may have resulted in an overestimation of the extent of some dry anomalies.

In climatologically arid regions where normal precipitation for the four week period is less than 20 mm, dry anomalies are not depicted. Additionally, wet anomalies for such arid regions are not depicted unless the total four week precipitation exceeds 50 mm.

In some regions, insufficient data exist to determine the magnitude of anomalies. These regions are located in parts of tropical Africa, southwestern Asia, interior equatorial South America, and along the Arctic Coast. Either current data are too sparse or incomplete for analysis, or historical data are insufficient for determining percentiles, or both. No attempt has been made to estimate the magnitude of anomalies in such regions.

The chart shows general areas of four week precipitation anomalies. Caution must be used in relating it to local conditions, especially in mountainous regions.

SPECIAL CLIMATE SUMMARY

Climate Analysis Center, NMC
National Weather Service, NOAA

MUCH OF THE CENTRAL U.S., ESPECIALLY THE MIDWEST AND LOWER MISSISSIPPI VALLEY, HAS BECOME ABNORMALLY DRY OVER THE PAST SEVEN WEEKS.

In addition to the four U.S. regions (West, Southeast, Texas, and northern Great Plains) previously mentioned in the Weekly Climate Bulletin (dated 5/14/88) as being anomalously dry, much of the Mississippi Valley, which had experienced near to above normal precipitation over the 1987-1988 Winter season, has recently observed meager rainfall since April 3. Amounts of well under four inches have been recorded by most stations in the Midwest and South (see Figure 1).

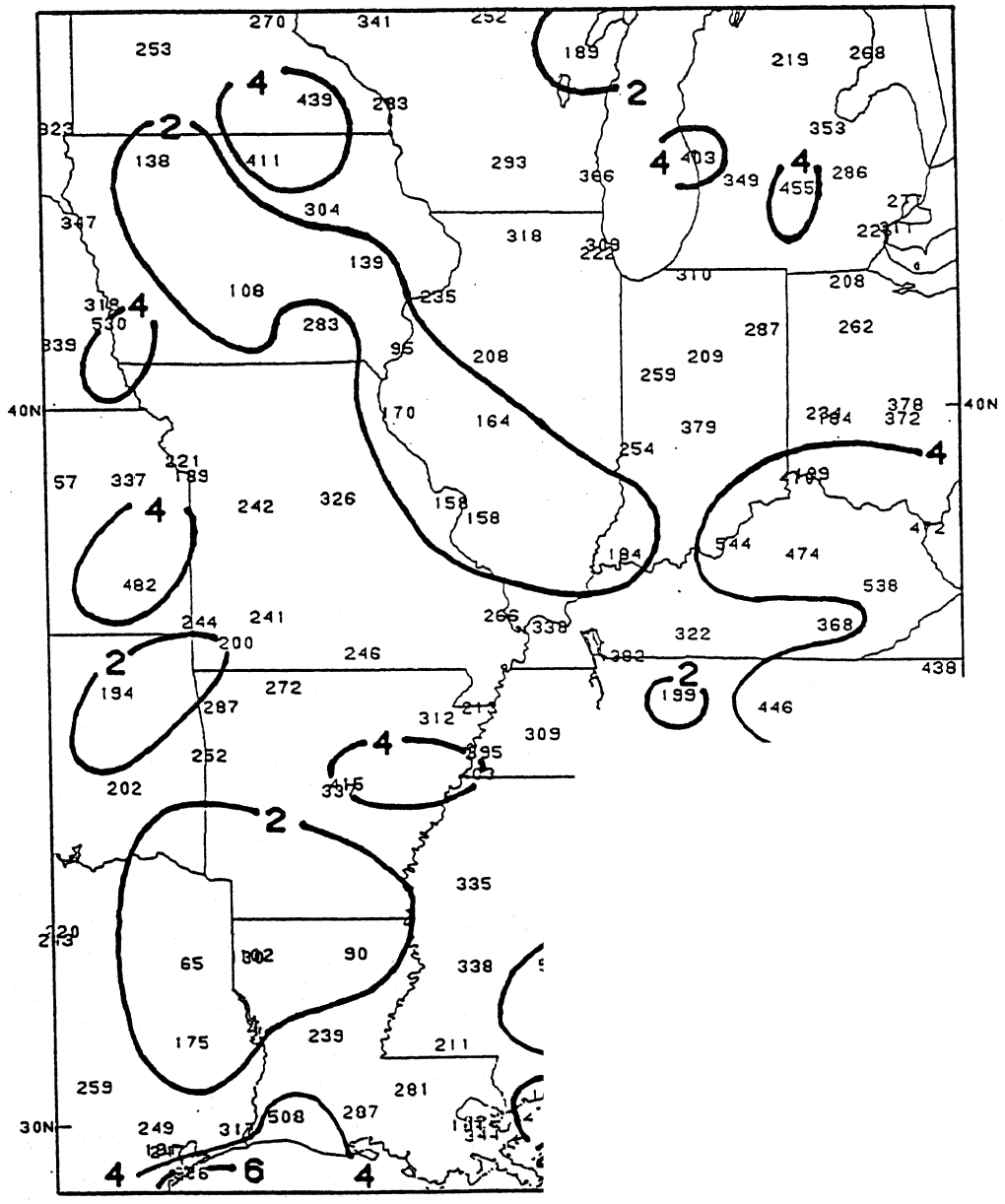


Figure 1. Total precipitation (isopleth
1988. Station values in
inches). Under two inches
past seven weeks in parts of

Generally, precipitation increases in the central U.S. during the spring months after an autumn or winter minimum and peaks during the late spring or early summer, especially in the Midwest (see Table 1). Since April 3, however, less than half the normal rainfall has been measured from Wisconsin southward to the Louisiana coast, with some areas recording less than a quarter of their normal precipitation (see Table 2). As a result, deficiencies of 4 to 7 inches have accumulated throughout the region (see Table 3).

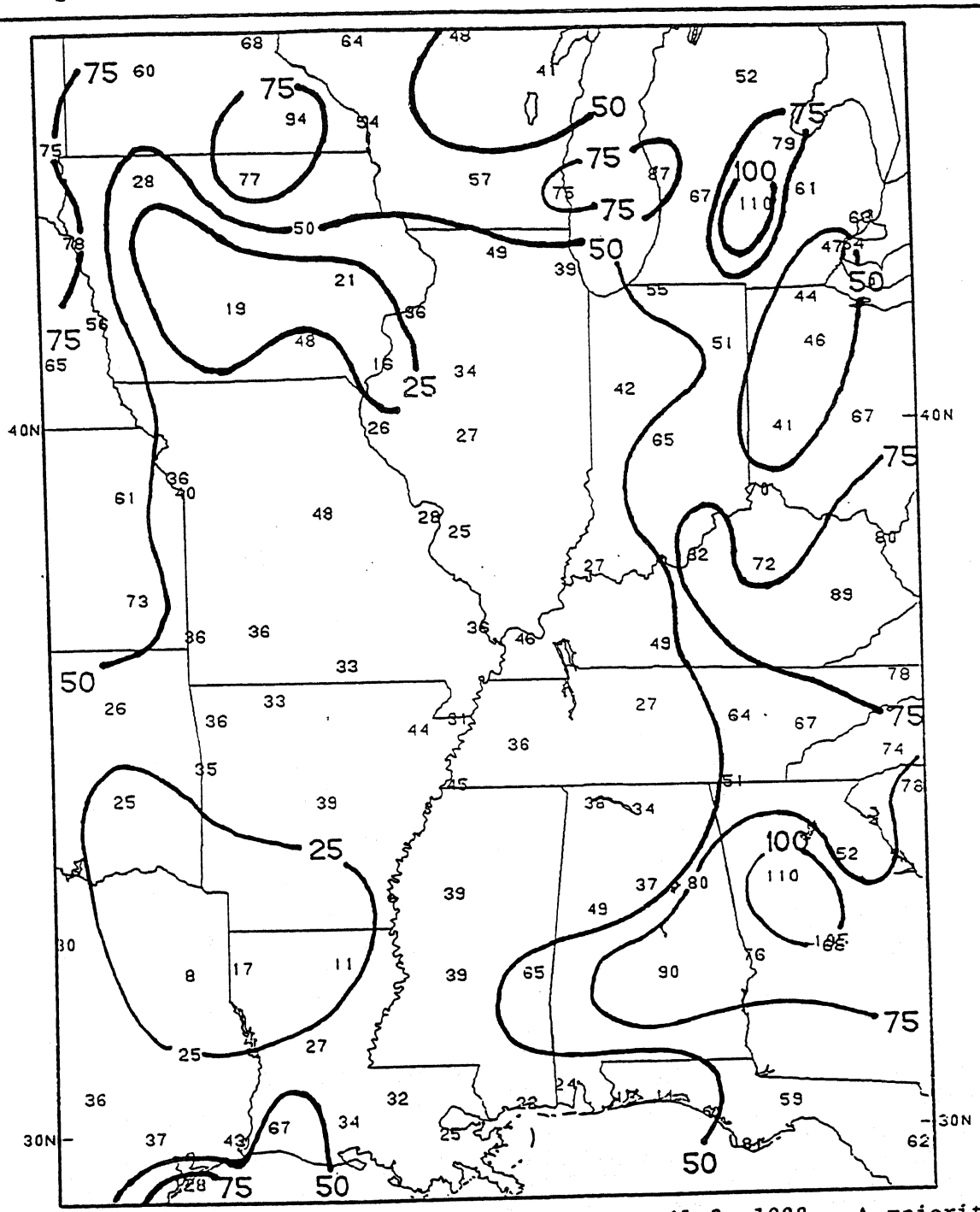


Figure 2. Percent of normal precipitation since April 3, 1988. A majority of the Mississippi Valley has experienced less than half their normal precipitation over the past seven weeks. Some stations in Iowa, Illinois, Texas, and Louisiana have observed less than 25%.

Table 1. Normal monthly precipitation amounts in inches for selected stations in the central and southern U.S.

Station	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Shreveport, LA	4.01	3.44	3.77	4.67	4.71	3.46	3.58	2.48	3.29	2.64	3.73	3.89
Little Rock, AR	3.89	3.81	4.67	5.39	5.28	3.65	3.60	3.05	4.24	2.82	4.35	4.21
St. Louis, MO	1.70	2.12	3.26	3.53	3.52	3.70	3.61	2.54	2.68	2.30	2.51	2.20
Chicago/O'Hare, IL	1.61	1.14	2.71	3.85	3.13	4.29	3.30	3.55	4.09	1.98	2.13	2.35
Kansas City, MO	1.19	1.23	2.63	3.34	4.41	4.67	4.11	3.79	4.28	3.30	1.64	1.48
La Crosse, WI	0.94	0.85	1.90	2.98	3.63	4.12	3.76	3.72	3.48	2.02	1.50	1.09
Dayton, OH	2.55	2.09	3.06	3.41	3.68	3.79	3.35	3.08	2.37	1.99	2.62	2.48

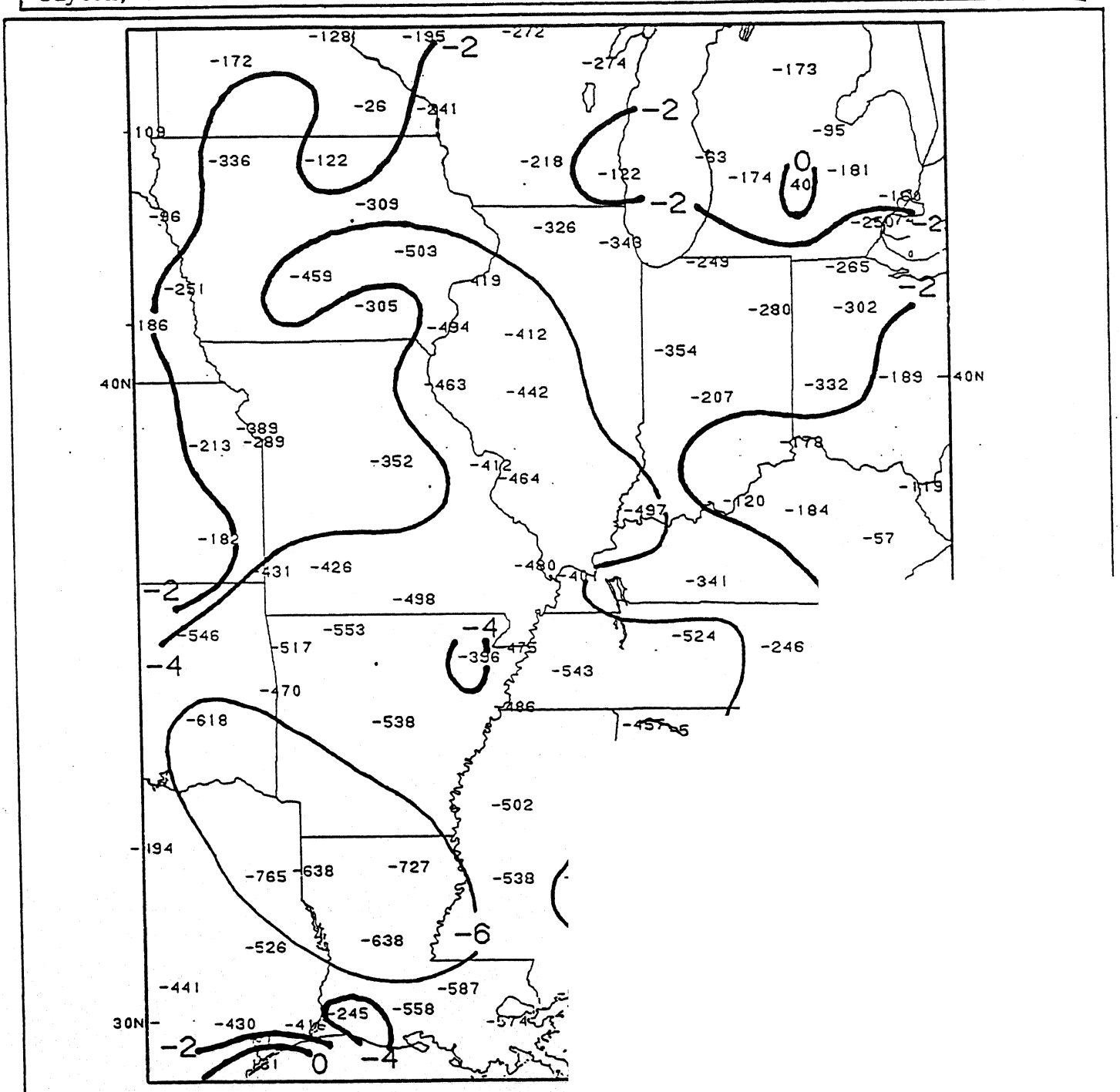


Figure 3. Departure from normal precipit
past seven weeks. Station valu
-543=-5.43 inches). Greatest
from Iowa southward to the Gul

The timeliness of rainfall in the late spring becomes critical to planting and the germination and growth of crop seedlings, most notably in the midwestern Corn and Soybean Belts (see Figures 4 and 5). Since the past seven weeks have been unusually dry, both the short and long-term soil moisture indicators (Palmer and Crop Moisture Indices, respectively) have recently become negative (indicating droughty conditions). In order to ease the current moisture deficiencies, significant rainfall will be needed soon.

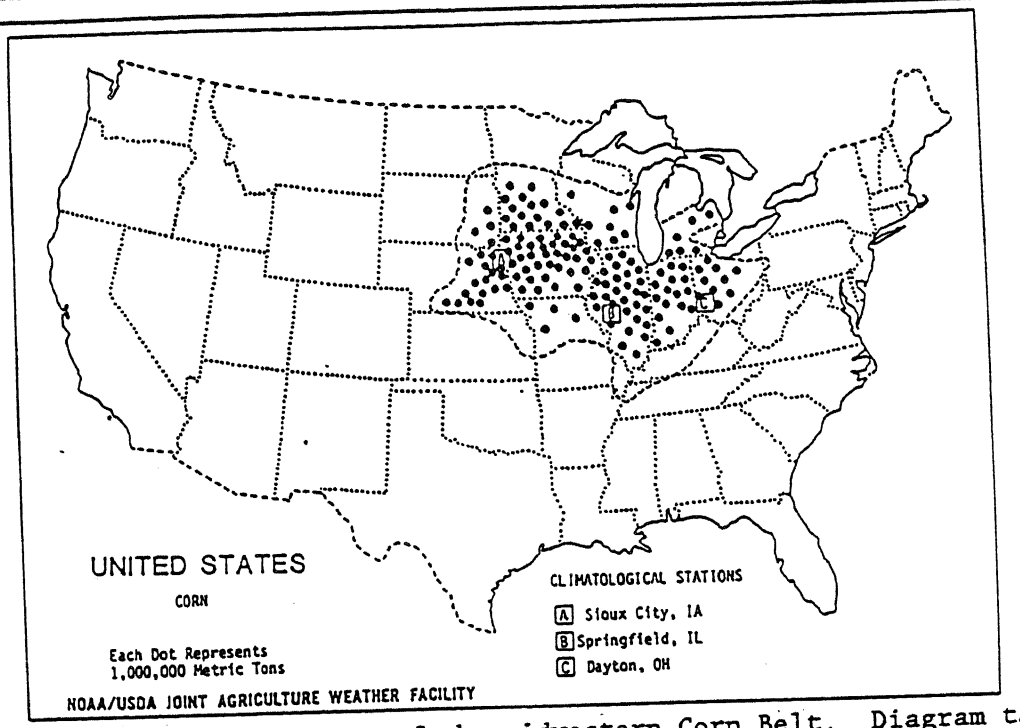


Figure 4. Approximate location of the midwestern Corn Belt. Diagram taken from page 21 of the U.S. Department of Agriculture's September, 1987 publication "Major World Crop Areas and Climatic Profiles", 159 pages.

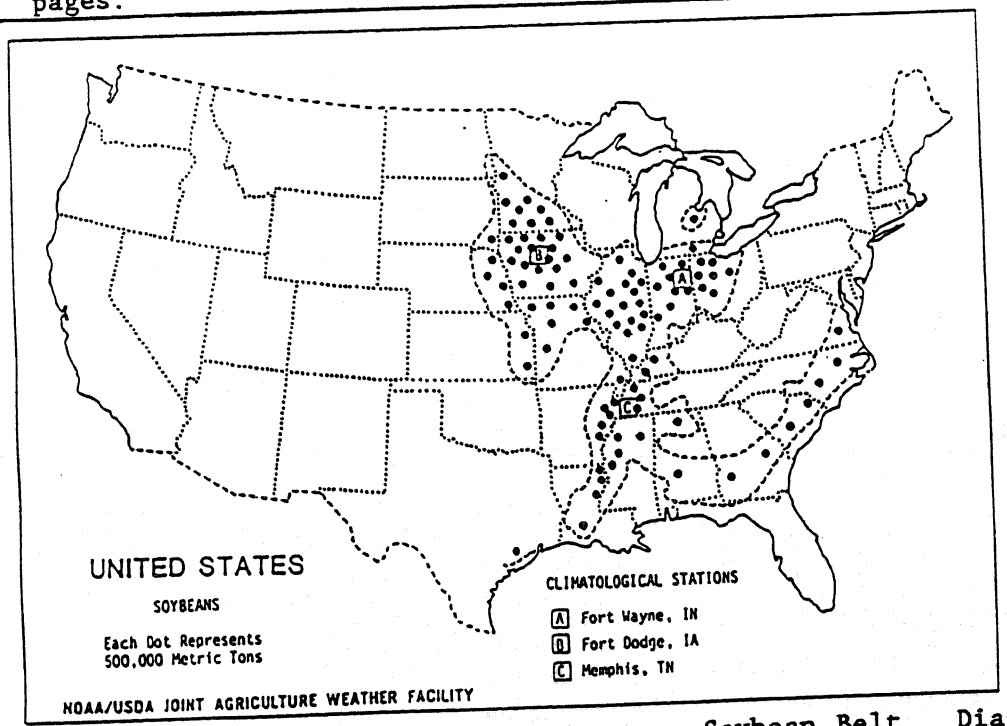


Figure 5. Approximate location of the midwestern Soybean Belt. Diagram taken from page 65 of the USDA's "Major World Crop Areas and Climatic Profiles".